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# ILLINOIS STATE GEOLOGICAL SURVEY

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## GEOLOGIC REPORT ON THE GROUND-WATER CONDITIONS FOR A MUNICIPAL SUPPLY IN SECTION 4, T. 44 N., R. 2 E., WINNEBAGO COUNTY, ILLINOIS

By

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Section of Ground-Water Geology and Geophysical Exploration

This report is prepared in response to a request by Mr. E. L. Bud Ruffy, Loves Park Water Department, 5440 Walker Avenue, Loves Park, Illinois, 61111, for information on the ground-water conditions in Section 4, T. 44 N., R. 2 E., Winnebago County, Illinois. The land surface elevation of the area under study is approximately 780 - 890 feet; surface drainage is westward via a small tributary of the Rock River passing through the central part of the Section. A supplemental ground-water supply is under consideration for the City of Loves Park.

The unconsolidated glacial drift deposits covering the bedrock are estimated to have a thickness of 50 to 160 feet. Section 4 lies immediately east of the bluff line of a large bedrock valley which is approximately coincident with the present-day valley of the Rock River. The thinnest drift is located in the northeast corner of the Section. The drift becomes gradually thicker to the west toward the buried bluff line of the bedrock valley and also becomes thicker to the southeast toward a small, southwest-trending bedrock valley.

The drift consists of pebbly clayey to sandy till, a nonwater-yielding material, and some interbedded layers of sand and gravel. The sand and gravel layers generally lie 40 to 60 feet below the upland surface and at or near the base of the drift. Thick, extensive sand and gravel layers occupy large parts of the bedrock valley to the west but on the adjacent bedrock upland these materials are much thinner, and tend to vary considerably in thickness and character over short distances. There are no well logs on file for Section 4, but numerous logs for adjacent Sections show domestic wells finished in the drift.

The bedrock, of Ordovician age, is dolomite, belonging to the lower part of the Galena-Platteville Group. This dolomite is tapped for small to moderate supplies in the Loves Park area. The dolomite yields water to wells only through cracks and crevices. The solid, unfractured rock is nonwater yielding. The water-yielding potential of a well finished in this dolomite is determined mostly by the number, size, and continuity of the fractures and crevices encountered during well construction.

The underlying Glenwood-St. Peter sandstone, whose top lies at an elevation of 565 feet, is an excellent source for moderate supplies. The sandstone is exposed in the bottom of the large bedrock valley but is covered with drift and about 200 feet of dolomite on the upland. For large supplies of ground water, a well must also tap the underlying Ironton-Galesville sandstone and associated dolomites. The enclosed driller's log and formation tops log for the City of Rockford Well No. 25, which is

indicate the general character,

depth, and name of the bedrock units. This well is finished at or near the top of the Mt. Simon sandstone.

In summary, the possibilities for successfully developing a supplemental municipal ground-water supply from the drift are poor. Drilling into the bedrock for the proposed supply is recommended. The shallow bedrock is capable of yielding moderate supplies. For large supplies a well will probably have to tap the Iron-ton-Galesville sandstone and the overlying sandstones and dolomites. Some water supply wells in the area have been drilled to the top of the Mt. Simon sandstone.

Please furnish the State Geological Survey the following information on any new well or test holes drilled: location; a driller's log recording all formations encountered in drilling and well completion data (screen, cementing, and casing records; appearance of water and static level, etc.).